

REMARKS

Claim 1 is amended and claim 2 is cancelled. No new matter is introduced.

Claims 1 and 3-6 are pending in the present application. Applicants request reconsideration of the present application in light of the foregoing amendments and the following remarks.

The Examiner rejects claims 1 and 4-6 under 35 U.S.C. § 103(a) over U.S Patent No. 5,782,673, to Warchime, in view of U.S. Patent No. 5,591,184, to McDonnell et al. (“McDonnell”). Applicants respectfully traverse this rejection. Claim 1 recites, in part:

[A] collar rigidly fixed to an outer surface of the mixing tube in an upper region of the mixing tube prior to the mixing tube being installed in the high-pressure fluid jet system, the collar being sized to slide upward through a bore of a cutting head to bottom out against a surface of a member in the bore of the cutting head, to prevent the mixing tube from being inserted any further into the bore of the cutting head, thereby locating the mixing tube longitudinally in a final desired position for use in the high-pressure fluid jet system, the terminal end surface being spaced from a top surface of the mixing tube body.

The Examiner rejects claim 1 by analogizing the collet insert 464 of Warchime to the collar recited in claim 1 and asserting that it bottoms out against a surface of a member in the bore of the cutting head. However, in Warchime, the collet insert 464 does not bottom out against a surface of a member in the bore of the cutting head, to prevent the mixing tube from being inserted any further into the bore of the cutting head, for locating the mixing tube longitudinally. Instead, upon tightening the collet cup 458 of Warchime, the collet insert 464 acts to lock the nozzle and centrally position it. Column 25, lines 9-11 (emphasis added). Accordingly, the collet insert 464 functions to center the nozzle tube with the central axis of the nozzle head assembly. See column 25, lines 22-23. Therefore, in Warchime, the collet insert 464 is not sized to bottom out against a surface of a member in the bore to prevent the tube from being inserted any further and locate the mixing tube longitudinally, as claimed in claim 1.

Further, the nozzle tube in Warchime would have to be otherwise supported until the collet cup 458 is tightened. Accordingly, devices such as that in Warchime, are prone to damage to the tube if the tube is not adequately supported when the collet cup 458 is loosened to widen the passageway 470 of the collet insert 464 for removing the tube 472. In contrast, when the collar is rigidly attached to the mixing tube prior to installation of the mixing tube in a high-pressure fluid jet system, as claimed in claim 1, the chance of damaging the mixing tube is reduced because the mixing tube will not inadvertently slip through the cutting head.

The Examiner correctly recognizes that Warchime fails to disclose that the collar is rigidly fixed to the outer surface of the mixing tube body; however, the Examiner asserts that McDonnell teaches that it is old and well known in the art of fluid jet cutters to incorporate a rigidly fixed collar. Applicants submit that McDonnell does not fulfill this deficiency in Warchime because the housing 34 of McDonnell is not a collar; rather item 34 of McDonnell is a housing that is positioned within the fluid jet assembly housing 44 via threads 35. Column 4, lines 29-31. The housing 34 of McDonnell is not configured to bottom out against the spring 40. Instead, the housing 34 is positioned within the fluid jet assembly housing 44 by screw threads 35 engaging internal threads on the housing 44. Column 4, lines 29-31. Therefore, in lieu of bottoming out against a surface of a member, the housing 34 includes threads 35, securing the housing 34 in place on its opposing lateral sides. The spring 40 may come in contact with the housing 34 in McDonnell; however, this contact is not the result of the housing 34 bottoming out against the spring 40, and the spring 40 does not prevent the housing from being inserted further in the assembly housing 44 to locate the mixing tube longitudinally in a final desired position. Accordingly, claim 1, and all claims which are dependent from claim 1, are allowable over Warchime in view of McDonnell.

Even if the housing 34 in McDonnell was considered to be a collar, which it is not, there is no motivation to combine the teachings of Warchime and McDonnell. Warchime suggests that survivability of the nozzle tube 472 is enhanced by better alignment of the nozzle tube 472. *See* Column 25, lines 16-20. To improve the alignment, Warchime teaches that the collet insert 464 acts to lock the nozzle tube 472 in place and the top end of the insert 464 comes in contact with the elastomeric ring 456 when the nut 458 is tightened, to place the elastomeric

ring 456 in a compressed state and center the nozzle tube 472. Column 25, lines 10-20; Figure 12. If the collet insert 464 of Warehime were replaced with the housing 34 in McDonnell, the collet insert 464 would no longer function to lock and center the nozzle tube 472. In other words, if the collet insert 464 was fabricated from a unitary body of material with the nozzle tube 472, the collet insert portion could not move toward and away from the nozzle tube 472 to lock and center the nozzle tube 472.

This modification to Warehime would also prevent the collet insert 464 from placing the elastomeric ring 456 in a compressed state due to the threaded opposing sides 35 of the housing 34. This is because the threads 35 would prevent the collet insert 464 from being biased by the collet cup 458 toward the elastomeric ring 456. Accordingly, if Warehime were provided with the housing 34 of McDonnell, Warehime would be rendered unsatisfactory for at least two of its intended purposes, and its principal of operation would change. If the proposed modification renders the prior art invention being modified unsatisfactory for its intended purpose or if it changes the principal of operation thereof, then there is no suggestion or motivation to make the proposed modification. MPEP 2143.01.IV and 2143.01.V. Accordingly, claim 1 and claims 4-6 are allowable over Warehime in view of McDonnell.

Nonetheless, to expedite the present Application toward allowance, claim 1 is amended to incorporate the dimension range of claim 2. The Examiner rejects this dimension range as obvious over Warehime in view of McDonnell and U.S. Patent No. 4,555,872, to Yie. Amended claim 1 states that a distance from a top surface of the mixing tube body to a bottom surface of the collar is 0.02-2.0 inches. As discussed in the specification of the present application, when this dimension falls in this range, the tool tip accuracy of the system is improved. U.S. Publication No. 2004/0107810A1, paragraph [0037]. None of the cited references in the Office Action teach, suggest, or motivate improvement of the tool tip accuracy by limiting this dimension.

The Examiner asserts that the support cone 60 with a passage 61 in Yie is similar to insert 432 and passage 446 in Warehime, and would therefore be on a similar order of size. Applicants disagree. "When the reference does not disclose that the drawings are to scale and is silent as to dimensions, arguments based on measurement of the drawing features are of little

value.” MPEP 2125; *See Hockerson-Halberstadt, Inc. v. Avia Group Int'l*, 222 F.3d 951, 956, 55 USPQ2d 1487, 1491 (Fed. Cir. 2000). The cited references here do not disclose that the drawings conform to a certain scale; therefore, to conclude that Warehime and Yie are on the same order of size is speculative.

Moreover, in Warehime, item 416 is the orifice assembly. Column 22, line 63. Therefore, the support cone 60 and orifice plate 70 of Yie are more akin to the component referenced with numeral 416 in Figure 12 of Warehime; not to the insert 432 as the Examiner asserts. In any case, dimensions disclosed for the insert 432 or orifice assembly 416 of Warehime, and support cone 60 of Yie, are wholly irrelevant to the portion of the structure for which the dimension range is claimed in amended claim 1.

The claimed range is for a distance from a top surface of the mixing tube body to a bottom surface of the collar. Warehime does not provide any dimensions with respect to its nozzle 472. Furthermore, the references do not recognize the impact of the claimed dimension range on the tool tip accuracy. Accordingly, even if Warehime was modified to incorporate a support cone having the dimensions recited in Yie, such a combination does not render obvious the dimension range in amended claim 1, which is for the top of the mixing tube to the bottom of the collar.

In the November 13, 2006 Office Action, the Examiner cited the dimension for the internal bore 21 of the upper nozzle 20 in Yie in support of rejecting the dimension range that is now in amended claim 1. Applicants, in the April 2, 2007 Amendment, pointed out that this dimension is not relevant to the dimension ranges claimed in the present application. The Examiner has withdrawn rejection of the claimed range in claim 1 based on the nozzle bore 21 of Yie. However, the Examiner now bases the rejection of this range on the dimensions for the support cone in Yie, and cites to *In re Aller*, 105 USPQ 233 (CCPA 1955), for the proposition that where general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. However, in *In re Aller*, the claimed values and the values in the cited references were for an identical set of parameters, i.e., temperature and concentration. In contrast, in the present instance, the general conditions regarding a distance from a top surface of the mixing tube body to a bottom surface of the collar

are not disclosed in the cited references. In fact, there is no recognition of any importance of such a dimension in the references.

Accordingly, the dimension range of claim 1 cannot be classified as an exercise of refinement of the support cone in Yie to discover an optimum range for a distance from a top surface of the mixing tube body to a bottom surface of the collar. Under the standard in *In re Aller*, amended claim 1 is not obvious over Warchime in view of McDonnell and Yie.

Furthermore, the references cited by the Examiner do not give any significance to the dimension between the top surface of the mixing tube to the bottom surface of a collar.

“Often, it will be necessary for a court to look to interrelated teachings of multiple patents; the effects of demands known to the design community or present in the market place; and the background knowledge possessed by a person having ordinary skill in the art, all in order to determine whether there was an apparent reason to combine the known elements in the fashion claimed by the patent at issue. *KSR Int'l Co. v. Teleflex Inc., et al.*, 127 S.Ct. 1727, 1740-1741 (2007). In The present case, the references do not teach or recognize the importance of the claimed dimension range and the dimensions the Examiner cites are for parameters that are distinct from that claimed in claim 1. Therefore, the cited references combined with industry demands and the knowledge of one of ordinary skill in the art do not provide any apparent reason to combine the features as claimed in claim 1.

The Examiner further states that “in view of their similarities in structure and function, such similarities in size would have been obvious to reproduce to meet established standards.” However, Warchime and Yie are not similar in structure and function, and thus do not provide any indication of established standards. Warchime incorporates the collet insert 464 with an elongated tubular nozzle 472. Figure 12. In contrast, Yie teaches a threaded nut having a bore through which the fluid exits the system, without disclosing a collet. Figures 1, 2, 8, 9 and 13. Furthermore, the dimension range in claim 1 is not a reproduction of the sizes disclosed in Yie because the dimensions cited by the Examiner are not for a distance from a top surface of the mixing tube body to a bottom surface of the collar.

The Examiner further asserts that it would have been obvious to modify Warchime with size limitations suggested by Yie for being sized to fit inside an apparatus

requiring specific dimensions. However, the dimension range claimed in amended claim 1 is for a distance from a top surface of the mixing tube body to a bottom surface of the collar, which is a longitudinal dimension. In contrast, the dimensions cited in the Office Action from Yie are lateral dimensions. Therefore, the cited dimensions cannot support the assertion that the dimension range in claim 1 can be designed to allow the tube/collar combination fit inside an apparatus having the lateral dimensions cited in the Office Action from Yie. The dimension range claimed in amended claim 1 can vary widely for different devices, considering fluid jet devices are available in various shapes, sizes, and lengths for different applications, as evidenced by the differences between the devices in Yie and Warehime, discussed above.

Even if the Examiner is suggesting that the dimensions in Yie provide some idea of a dimension for a bore or support cone diameter in a fluid jet system, a distance from a top surface of the mixing tube body to a bottom surface of the collar is not limited by a bore or support cone diameter. Accordingly, claim 1, and claims 3-6 which are dependent from claim 1, are allowable over Warehime in view of McDonnell and Yie.

Claim 3 recites, the “wall thickness of the collar is 0.01 - 0.2 inches.” In contrast, Yie does not teach a collar and thus cannot provide any suggestion for sizing the collar. Similar to the discussion above, the dimensions of the support cone 60 in Yie provide no indication for a person of ordinary skill in the art to optimize the wall thickness of a collar rigidly attached to the mixing tube. The support cone dimensions in Yie do not bear any significance for rendering obvious the wall thickness of the collar of the present application. Accordingly, claim 3 is allowable on its own merits, in addition to being allowable for being dependent from claim 1.

Applicants submit that all of the claims remaining in the application are allowable. Favorable consideration and a Notice of Allowance are earnestly solicited.

The Director is authorized to charge any additional fees due by way of this Amendment, or credit any overpayment, to our Deposit Account No. 19-1090.

Respectfully submitted,
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